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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,504	12/12/2003	Charles Augustus Choate IV	BUR920020015US2	1005

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IP Law Department, 972E
IBM Corporation
1000 River Street
Essex Junction, VT 05452

EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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05/07/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/734,504	Applicant(s) CHOATE ET AL.	
	Examiner RAKESH K. DHINGRA	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/26/09 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended claim 43 by adding new limitation "between about 100 mTorr to". Further applicant has cancelled claims 9-12, 16, 33-42.

Thus only claim 43 is now pending and active.

New reference Cann (US 5,340,401) reads on limitation of amended claim 43. Accordingly claim 43 has been rejected under 35 USC 103 (a) as explained below.

Further, balance claims 3 and 5-11 have also been rejected under 35 USC 103 (a) as explained below. Further, claim 43 has also been rejected over Wang (US 6,453,924) as explained below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cann (US 5,340,401).

Regarding Claim 43: Cann teaches a deposition apparatus comprising:

a vacuum process chamber 31 maintained at a substantially uniform process chamber pressure between about 0.1 mTorr to about 200 mTorr (which includes the claimed pressure range of 100 mTorr to 200 mTorr);

a substrate pedestal 63 for holding a semiconductor wafer (substrate) 66 (which is planar substrate) within the process chamber, the semiconductor substrate comprising a layer formed thereupon by a process performed within the process chamber at the process chamber pressure; and

a cell (formed between the substrate and the graphite heater element 61) for providing carbon which is incorporated in the layer during the same process which forms the layer upon the semiconductor substrate within the process chamber and at the same process chamber pressure, the cell is located entirely within the process chamber 31, the cell is exposed to the same process chamber pressure as the semiconductor substrate during the process which forms the layer incorporating carbon, the cell is not coupled to any gas inlet, the cell provides carbon to the process chamber by desorption of carbon from the cell during the process of forming the layer, the cell comprising:

a substantially solid material 61 having exposed surfaces located entirely within the process chamber; and

a carbon-containing fluid (methane) is introduced into the process chamber 31 (which would obviously adhere on the exposed surface of heater 61. Cann further teaches that configuration of the chamber can be modified for use with substrates of various shapes (could also include plurality of substrates) and the pressure in the chamber may be optimized as per process limitations like deposition rates (e.g. Figs. 1, 2 and col. 4, line 40 to col. 6, line 35 and col. 18, lines 8-30).

Further claim limitation regarding processing semiconductor wafer pertains to the workpiece worked upon and is not considered to impart patentability in apparatus claims.

In this connection the courts have ruled:

Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Still further, claim limitation pertaining to the coating being of silicon and the cell being an impurity cell pertain to contents of the apparatus during an intended use, and since the structure of prior art meets the structural limitations of the claim, the same is considered capable of meeting these limitations.

In this connection the courts have ruled:

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over [Wang (6,453,924) which incorporates the disclosure of Tom (US 5,704,965)].

Regarding Claim 43: Wang discloses an apparatus for supplying a dopant or impurity species (see col. 9, lines 33-41 of Wang) into a semiconductor thin film on a substrate. In the Fig. of Wang, the clean room represented by wall 22 is a chamber in which semiconductor processes such as deposition are performed, and therefore the clean room can properly be described as a low pressure deposition chamber. Impurity cells are located within the deposition chamber delineated by wall 22. The cells comprise the substantially solid sorbent material having exposed surfaces located entirely within the deposition chamber, and an impurity-containing fluid (such as germanium containing germane) adhered on said exposed surfaces. Also, each impurity cell of Wang is contained within an enclosure in the form of local supply vessel 50 or local supply vessel 96, with an impurity source in the form of main liquid supply vessel 12 coupled to the enclosure (50 or 96) by a connector 18 which includes a valve.

Regarding the claim recitations of "a process chamber maintained at a substantially uniform

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process chamber pressure of between 100 mTorr to about 200 mTor” and “a layer of silicon formed . . . at the predetermined pressure”, and “an impurity cell for providing an impurity . . . at the same process chamber”, it is noted that a pressure limitation is a process-type limitation that does not so limit the present apparatus claims. Further, regarding in the claim limitation “a plurality of substrates arranged within the process chamber, the semiconductor wafers comprising a layer of silicon formed thereupon by a process performed within the process chamber at the process chamber”, since tools 86, 130 can be deposition tools these would obviously include semiconductor wafer(s). Further, Wang incorporates the disclosure of Tom (US 5,704,965) [Wang - paragraph bridging cols. 2 and 3] wherein Tom teaches teaches (see Figs. 3 and 7, for example) an apparatus for incorporating a fluid (gas or liquid – see col. 9, lines 6-21, for example) on a substrate. The apparatus comprises a fluid storage dispensing vessel that is properly described as “a deposition chamber” because it is filled by a deposition process. Tom describes the fill process of his apparatus at col. 17, line 28 to col. 18, line 6. The fill process is a process of incorporating an impurity (e.g. the germanium in germane) in a thin film on the carbon sorbent substrate contained in the deposition chamber (e.g. cylinder 102 of Fig. 7). The fill process deposits the fill material (e.g. germane) by adsorption at low pressures (see col. 18, lines 7-13, for example), and it is therefore a low pressure deposition process, and the vessel is a low pressure deposition chamber. Tom also teaches (see Fig. 1 of Tom, for example) that ceramics such as zeolite were well known in the prior art as sorbent materials for adsorbing fluids as a thin film on the ceramic sorbent material. Further, Tom teaches that the impurity cell is a porous carbon sorbent material in a form such as beads, tablets, extrudates, cloth, web, honeycomb matrix monolith, etc. (see col. 12, lines 48-57, for example). The porous carbon is a

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cell or alternatively each pore in the porous carbon is a cell. Tom's apparatus comprises a cell comprising a substantially solid material (the above described carbon sorbent material) located entirely within a deposition chamber (the gas cylinder described from col. 12, line 58 to col. 13, line 24, and gas cylinder 102 illustrated in Fig. 7, for example). An impurity (gas or liquid) such as germane is adhered to said exposed surfaces as recited in the claim. It is noted that germane is a germanium containing fluid, and since germanium is an impurity, therefore the germane fluid of Tom is inherently "an impurity containing fluid adhered to said exposed surfaces" as recited in the claim.

Further claim limitation regarding processing semiconductor wafer pertains to the workpiece worked upon and is not considered to impart patentability in apparatus claims.

In this connection the courts have ruled:

Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Still further, claim limitation pertaining to the coating being of silicon pertains to the intended use of the apparatus, and since the structure of prior art meets the structural limitations of the claim, the same is considered capable of meeting these limitations.

In this connection the courts have ruled:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAKESH K. DHINGRA whose telephone number is (571)272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rakesh K Dhingra/
Examiner, Art Unit 1792

/Karla Moore/
Primary Examiner, Art Unit 1792